JANUARY 2007

GIS . In The News

NEWS FROM THE CITY OF SALISBURY ◆ NORTH CAROLINA GIS COMMUNITY

VOL 6 NO 1

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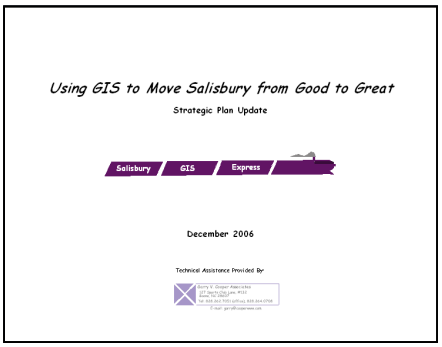
GIS DIVISION NEWS

City of Salisbury Updates GIS Strategic Plan



I am excited to report that Dr. Garry Cooper from Appalachian State University visited Salisbury to facilitate a day-long session to update the GIS Strategic Plan. Once again, both City and County staff members attended, and provided input for the plan.

One of the first items that Dr. Cooper undertook was to validate (with input from the participants) the vision statement of the GIS Strategic Plan. The vision originally conceived of in 2004 still holds true for the participants: collect, maintain, and display data; utilize data analysis/modeling to make better decisions; provide necessary resources; and implement GIS-based work order system.

See **GIS Strategic Plan**, Page 15

GIS NEWS

Spotlight on Trey Cleaton

By Patrick Kennerly, SRU Planning & GIS

Salisbury-Rowan Utilities (SRU) is pleased to recognize the recent accomplishments of Planning & GIS Division employee Trey Cleaton. Trey first came to work for SRU in the fall of 2003, having just completed his undergraduate degree in Geography with a concentration in GIS. Over the next three years, in addition to working full time, Trey attended graduate school at UNCC and, earlier this year, received his Masters Degree in Geography with a concentration in Planning & Regional Analysis.

Trey Cleaton promoted to Systems Analyst

After reaching this milestone, and in recognition of his skills and abilities using GIS, Trey was reclassified and promoted from a GIS Mapping Technician to GIS

See **Trey Cleaton**, Page 2

GIS DIVISION NEWS

GIS Aids in Customer Service

By Benita Staples, City of Salisbury GIS Intern

The City of Salisbury's first outcome and goal adopted by the City Council in March 2006 is to create a culture of excellent customer service within the city organization. As the city moves forward in accomplishing this goal, they are taking into consideration and getting help from the GIS Division.

The city has created a customer service design team whose goal is to reinforce that customer service message internally throughout the city organization, publicly throughout the community and to generally build momentum. One way they have decided to do this is by

See **Customer Service**, Page 4

Visit us on the web! http://gis.salisburync.gov

A Special Thanks To The GIS Division

By Mike Horney, Support Services Engineer for the Town of Kernersville

The Town of Kernersville would like to thank GIS Coordinator Kathryn Clifton for assisting in our goal of growing our GIS system and resources. Recently, I was given Kathryn's name as a reference for outstanding GIS development in small to medium sized towns. In fact, Salisbury was one of only two places in the state labeled as exemplary for GIS development for towns of this size. I contacted Kathryn in hopes of gaining just some of her knowledge about how a small town could build and utilize an enterprise GIS system. I received far more than I expected, and can say that our town will be far more prepared thanks to Kathryn's willingness to help.

Four staff members from the Town of Kernersville visited with Kathryn on the morning of August 23, 2006. In addition to taking the time to fully answer a long and detailed questionnaire, she allowed us to come back and observe the user group meeting on August 25, 2006. This experience provided us with a framework on how GIS can be utilized town wide, and how important cooperation among various departments can be.

Once again, I would like to thank Kathryn and the City of Salisbury staff for providing us this valuable experience, as we are already closer to our goal as a result. I also look forward to future endeavors, including the great training courses offered in the City of Salisbury.

Mike Horney
Support Services Engineer
Town of Kernersville Public Works Department ◆

Trey Cleaton (from page 1)

Analyst. In addition to his previous responsibilities mapping the water and sewer infrastructure, he now also functions as GIS Coordinator for SRU and serves as the primary linkage between SRU and the Citywide GIS Coordinator.

In addition to his role at SRU, Trey has recently completed classes in SQL Server 2000 Administration and ArcSDE Administration for SQL Server. This will allow him to assist in the operation and maintenance of the City's SDE database, and also will provides a backup administrator in the event that Kathryn Clifton is unavailable at some time.

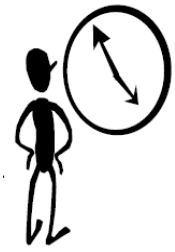
Trey looks forward to the completion of the primary water distribution and sewer collection system data collection project. This nearly 4-year process is expected to conclude in the summer of 2007. While there will still be some ongoing data collection needs in the future, Trey is excited about the prospect of having time to actually use the data for analysis and future planning for SRU. He will be involved in using water modeling software that will incorporate the GIS data to analyze the strengths and weaknesses of the system and plan for future extensions. He will also be involved in spreading the use of GIS throughout Utilities, such as putting laptops in maintenance vehicles so that data will be available to them at all times. Incorporating GIS with a future work-order system will be another high-priority item for Trey.

Once again, Trey is to be congratulated on all of his successes this year. Much has been accomplished, but at the same time, his journey with GIS is just beginning.

For more information about GIS efforts at Salisbury-Rowan Utilities, contact Patrick Kennerly at pkenn@salisburync.gov or Trey Cleaton at tclea@salisburync.gov. ◆

GIS CALENDAR

Don't Forget!



The GIS Users Group Meetings are scheduled to meet the third Friday of every other month at 9:00 AM at 100 West Innes Street (The Plaza) in the second floor conference room.

Upcoming Meeting Dates :

- February 23, 2007
- April 13, 2007
- June 22, 2007

These meetings are open. Anyone with an interest in GIS is welcome to attend. As always, refreshments will be served.

See the online GIS calendar (http://gis.salisburync.gov/gis_calendar.asp) for additional important dates. ◆

GIS PROJECT SPOTLIGHT

NPDES Data Collection Continues

Joey Wilson, of the Mobile Technologies Division of Bradshaw Consulting, met with Kathryn Clifton and Benita Staples to discuss revisions to the ArcPad applet developed for the collection of discharge points along the creeks of the City of Salisbury.

Enhancements to the code enable field personnel to collect a discharge point along a stream, and then enter information about each pipe or ditch that flows to that point along the stream. Linework representing the pipes and ditches are drawn programmatically, based on a bearing and distance provided by the person collecting the data.

The mapping efforts underway are part of the EPA-required control measures that must be put in place to reduce the discharge of pollutants from the municipal separate storm sewer system (MS4). Other measures include:

- Public education and outreach on stormwater impacts
- Public involvement/participation
- Construction site stormwater runoff control
- Post-construction stormwater management in new development and redevelopment
- Pollution prevention/good housekeeping for municipal operations

For additional information about requirements for NPDES, visit the NC Division of Water Quality website at http://h2o.enr.state.nc.us. ◆

Joey Wilson of Bradshaw Consulting Services met with Kathryn and Benita to update ArcPad NPDES code.

Data collector in hand, and bright orange a-glow, Kat and Benita head out to test the revised application.

MORE GIS DIVISION NEWS

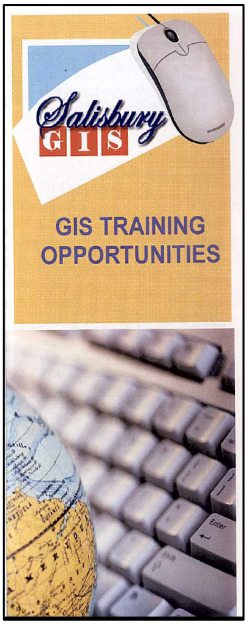
Salisbury's New Training Recruitment Tool

GIS Division Intern, Benita Staples, has worked diligently to develop a brochure that would highlight the very reasonably priced GIS training opportunities that are available in Salisbury. After one week of cutting, pasting and editing, it is now available. The brochure shares information on the GIS courses being taught in the City of Salisbury Training Room.

Approximately 400 copies of the brochure have been mailed to City government Offices, County Planning and Tax Mapping Divisions, Land Trusts, and Divisions of NC Council of Government all across the state in hopes of recruiting interested individuals to gain their professional development in Salisbury.

The ESRI Authorized Partner Education Center in Salisbury has been of great benefit to the City of Salisbury GIS Division. In the past, the Training Center has received people from more than 15 counties and accumulated roughly $33,924 worth of revenue that has been used to expand the GIS Library, purchase supplies and software, offer advanced training to City of Salisbury staff, and more.

For more information on City of Salisbury GIS Training opportunities visit the website at: http://www.gis.salisburync.gov ◆



USER INSIGHT

Comments & Suggestions Welcome

Your comments and suggestions for *GIS In the News* would be greatly appreciated. Also, if you have a question about GIS, its uses, software, etc. please submit them as well. Just send an e-mail to Kathryn Clifton with the subject "GIS In the News". ◆

"*A map is the greatest of all epic poems. Its lines and colors show the realization of great dreams.*"
Gilbert H. Grosvenor, Editor of National Geographic (1903 - 1954)

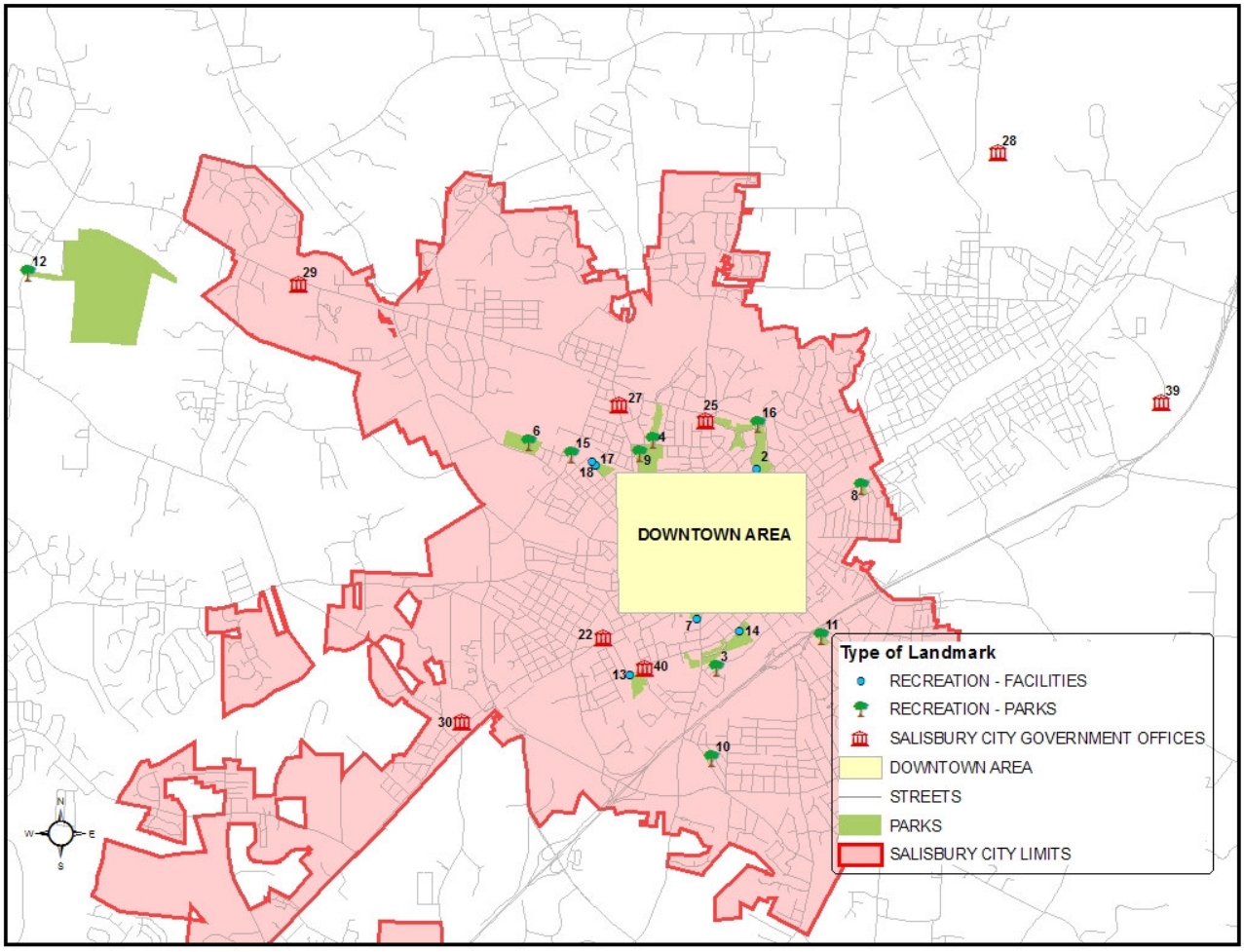
"*Knowing where things are, and why, is essential to rational decision making.*"
Jack Dangermond, Environmental Systems Research Institute (ESRI)

Customer Service *(from page 1)*

creating a Customer Service Map.

The committee approached the GIS division with ideas about creating a brochure that would include a map of all the municipal departments in the city including police stations, fire stations, water treatment facilities and parks. The division created a map by using the Salisbury Streets layer as a foundation, then adding the city limits boundary, and next highlighting the locations that provide a city service with point features on the map and parks with polygon features on the map. Each location is assigned a number as part of its attribute data and in a corresponding table, that number will tell customers which office and service is offered at each location shown on the map. For further detail, since so many services are offered in historic downtown Salisbury, an enlarged inset map of the downtown provides even more data about the services of a location by providing an actual address and contact number for the office.

GIS technology is helping people make better decisions in a host of areas, such as public policy and governance, public information and community engagement, and in this case customer service operations. The GIS Division is helping the team to make the services that the City offers be more accessible and available. ◆

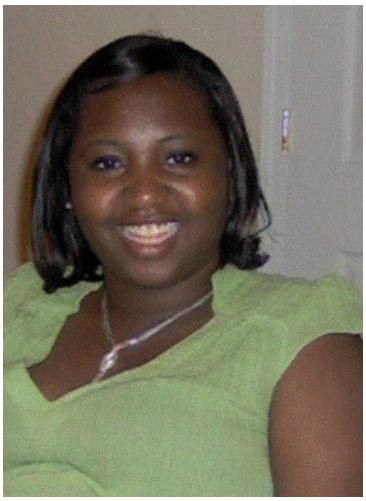


GIS Division Adds Position—GIS Technician

Effective December 29, 2006, GIS Intern Benita Staples joined the City of Salisbury team.

The addition of a GIS Technician was identified in the 2004 GIS Strategic Plan as a high priority item in order to maintain the current service level of GIS, and expand its use into other departments within the City.

Benita has brought with her a can-do attitude when it comes to tackling projects. She meets each new project with enthusiasm and a smile. And there are many projects!



Benita Staples has joined the City of Salisbury team.

Benita has continued the work done by previous interns in updating the city address data layer in preparation for the 2010 Census. Also, Benita has joined Civil Engineer Craig Powers in identifying points of discharge along creeks and their tributaries within the Salisbury ETJ (extra-territorial jurisdiction).

Kathryn Clifton is excited to have Benita as part of the City team, and is optimistic about the coming year.

Please welcome Benita to Salisbury. You may reach her via e-mail at bstap@salisburync.gov or via phone at 704-638-2159. ◆

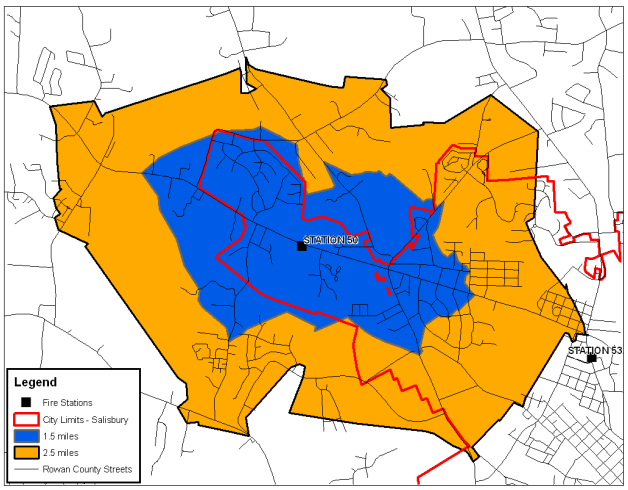
Just what does a GIS Technician do?

* Update, revise, and check point address layer for errors.
* Review street centerline for errors in conjunction with point address project.
* Aid other departments with map preparation and general GIS questions.
* Prepare Information Product Descriptions (IPDs) for new projects.
* Further document existing projects.
* Research project implementations for basemap inventory projects—traffic signs, trees, sidewalks, transit, cemeteries, etc.
* Collect data in the field using GPS.
* Prepare and compile information for the GIS Newsletter.
* Develop and update GIS training brochure.
* Prepare information for Government Access Channel Access 16.
* Assist GIS Coordinator as needed with other projects as they arise.

GIS Goals Review

On August 31, 2006 the Land Management and Development office, which includes the GIS, Development Services, Planning, and Engineering Divisions, gave a jam packed presentation on how the department has functioned in the past and how they plan in the upcoming year to meet the council outcomes and goals. The office, which has a large number of council outcomes and goals to be held accountable for, managed to address customer service, neighborhood improvement and safety, economic development, Salisbury Vision 2020, employee diversity, Rowan-Salisbury Schools partnership, Downtown Salisbury, development review processes and ordinances, as well as performance measures, in about two hours.

Fire Response Districts



An example of how the GIS Division Supports the Fire Dept.

While the GIS Division is not responsible for a Council outcome alone, the Land Management and Development Department, along with many other departments, uses GIS to support data collection, day-to-day operations and decision making. During GIS Coordinator Kathryn Clifton's segment of the presentation, she highlighted specific projects that GIS has been instrumental in such as the 2006 annexation, utilities projects and mapping fire response districts (pictured), along with many more. Overall, the Goals Review proved to be an opportunity for the Salisbury GIS Division to reaffirm the importance of GIS to the progress of Salisbury. ◆

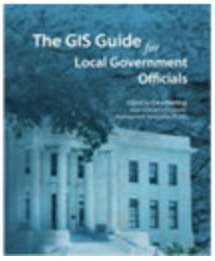
GIS DIVISION NEWS

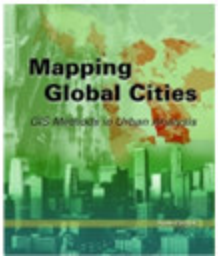
GIS Library

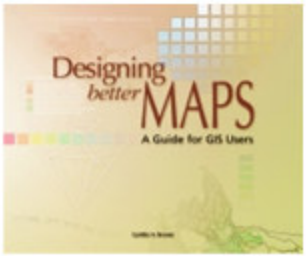
By Benita Staples, GIS Intern

The GIS Division is proud to announce the creation of the GIS Library. The library consists of various resources (articles, books, maps, etc) on topics in GIS that will appeal to a broad audience. Currently the library has material on hand to benefit staff and to be loaned out in the following categories:

- Administration
- Community Outreach
- Development Services
- Engineering
- Fire
- Human Resources
- Management Services
- Planning
- Police
- Utilities
- Community Development
- Public Services

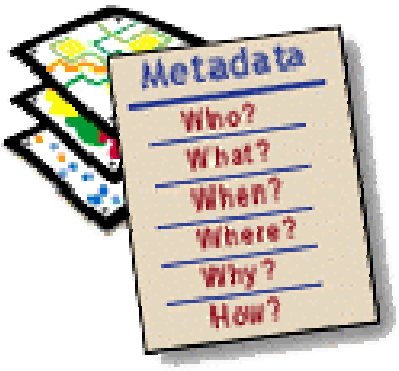






For more information or to borrow material from the library, stop by the GIS Division at City Hall on 217 South Main Street or contact GIS Intern Benita Staples at 704.638.2159 or bstap@salisburync.gov. ◆

DEAR GUS



Dear GUS (GIS User Specialist) is a column that addresses common questions that GIS users may encounter.

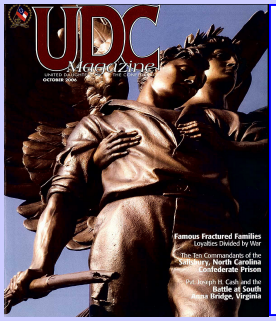
Dear GUS,

Soon, I will be requesting data from other agencies for a project in my department. I want to make sure that I get good, useful information. Any suggestions on questions that I should ask?
Signed, Data Quandary

Dear Data Quandary,
I'm glad that you are asking this question before you send off for the data. You should request that the person from whom you receive this data send along metadata. Metadata is data about data. Metadata answers the questions of…

Who created the data?
What data was collected—what features and what attributes?
When was the data created and last updated?
Where was the data collected?
Why was the data collected—for what purpose or purposes was the data collected?
How was the data collected or created?

I hope that this helps! Good luck on your project. GUS



Did You Know?.....

City of Salisbury GIS Coordinator Kathryn Clifton has been published nationally in the October 2006 issue of the United Daughters of the Confederacy Magazine. The article, "The Ten Commandments of the Salisbury Confederate Prison", utilized GIS to create a map that estimated the locations where parts of the Salisbury Confederate Prison such as the barracks, hospital, prisoner officers' quarters and arsenal, once stood. Please congratulate Kathryn on the national recognition of her talents and expertise!

GIS NEWS

Free HAZUS-MH ArcGIS 9 Extension Aids in Disaster Management

HAZUS-MH is a free extension to ArcGIS 9 that provides what is called a risk-based approach to disaster management. What that means is, you can look at a geographic area and you can assess, based upon information about hazards that have occurred in that area or might occur, whether a risk exists and what that risk might be. Using HAZUS-MH, we can calculate scientifically defensible estimates of damages, economic losses that might occur as a result of those damages, and the impacts of various types of mitigation that we could place within those areas. Because this technology resides on a geographic information system, it allows us to not only assess whether a hazard exists, but also allows us to visually display where that hazard is and the vulnerabilities, such as the buildings in our community, the people who live in the community, and how the hazard and that exposure interact.

HAZUS-MH allows GIS users to identify vulnerable areas, assess level of readiness to deal with a disaster before disaster occurs, estimate potential losses from specific hazard events, decide how to allocate resources for most effective and efficient response and recovery, and prioritize mitigation measures that need to be implemented to reduce future losses as a result of either Hurricanes, Riverine and Coastal Floods, or Earthquakes. Once HAZUS-MH is installed it can be accessed through the GIS ArcMap application. The screen will be very familiar except for the addition of four new menus: Inventory, Hazard, Analysis and Results. The inventory menu provides lots of site-specific information such as hazardous materials, demographic data about how many people live in that area, when buildings were constructed, and a variety of other important types of information. The hazard menu allows you to open up a scenario wizard where you are able to for example recreate a historic storm and display on the map and in tables its effects. The analysis menu allows the users to actually understand how the software is calculating the damages while the results menu provides for the ability to quickly produce reports and maps in the GIS. One of the great advantages of having HAZUS designed on a GIS platform, such as ArcGIS in this case, is that not only can we take advantage of the powerful amount of information this tool comes with right out of the box, but we can quite easily add additional information to our maps as well to provide a context for what it is we are studying.

More information is available at www.fema.gov/HAZUS. The website provides an overview of the tool; details about the models; information about user groups so that you can find out who is using HAZUS in your area and how they are using it; and information about where you can find training on this application. ◆

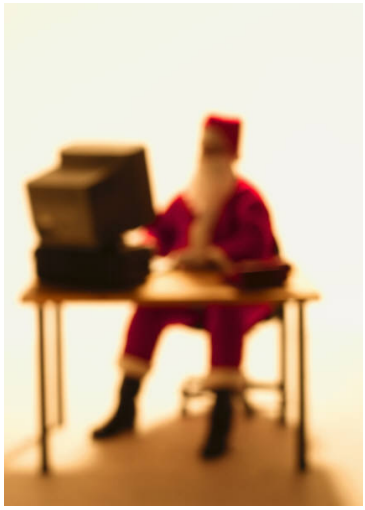
DEAR GUS

Dear GUS (GIS User Specialist) is a column that addresses common questions that GIS users may encounter.

Dear GUS,

Recently, I have been working on a project to select parcels that meet certain different criteria in my city for a project for the Mayor. So, I really want to get this right! Anyway, it is now time to put them all into one layer to illustrate them on the map. Can you give me some insight on how to do this? I am really at a loss. Thanks!

Signed, Aiming to Please



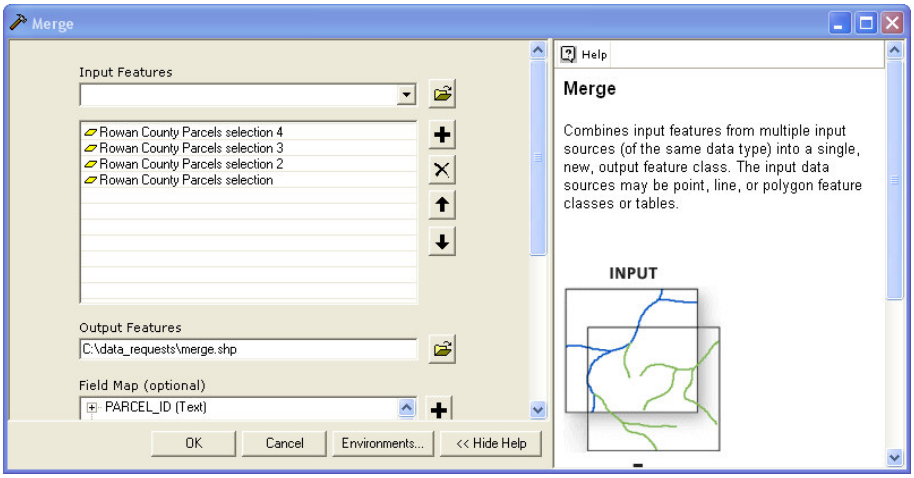
For GUS' Response, see **Dear GUS**, page 8

Dear GUS (from page 7)

Dear Aiming to Please,

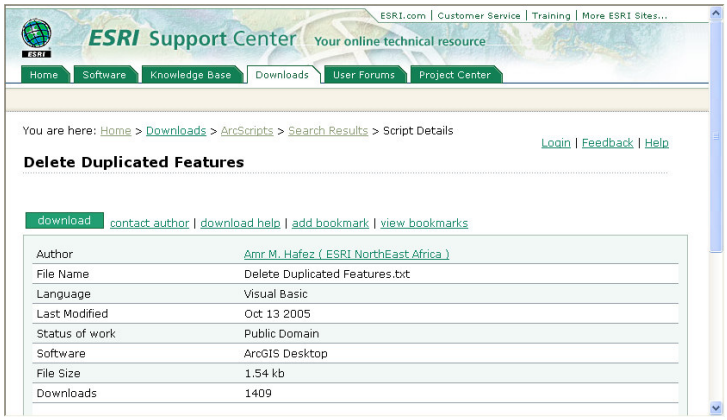
Your question sounds like a relatively simple one, but I do not want to just give you a quick answer and be done with it. Instead, I want to delve a little more into what you are doing.

First, as I understand your project, you have created a number of different selections within an ArcMap document from the same initial data layer. To put these selected features all into one layer will require that you perform a Merge. So, to begin the process, click on the ArcToolbox icon within ArcMap to open ArcToolbox and navigate to Data Management > General > Merge.



Merge tool window in ArcToolbox

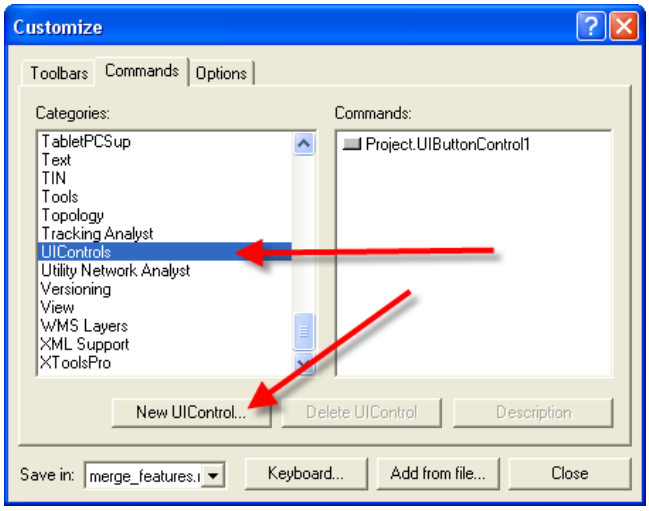
After you double-click the Merge tool, you will be presented with the Merge dialog window. Select each of the data layers that you want to merge together, and indicate the output data location. All selections will be merged into a single feature class. Because these selections all originated from the same data layer initially, then they will have the same field names.



ESRI Website screen offering ArcScripts download

One thing that you might notice immediately is that the new feature class that you created may have duplicate features. You will need to do one more thing in order to delete the duplicate records. I happened to find a nifty little script on ArcScripts at http://arcscripts.esri.com titled Delete Duplicated Features. This is simply some code that you will need to place in a button control to remove duplicate features. The author of this script indicates that it works best with feature classes of 500 features or fewer.

To use the script, you will need to add a Button Control within ArcMap and assign the code to the button. So, right-click in a grey area next to an existing toolbar and choose Customize. I recommend that you define a new toolbar in the current project map document. Then, click on the Commands tab and scroll down to UIControls. Click the the New UIControl button, and choose UIButtonControl from the New UIControl dialog window. Choose Create and Edit, and then paste the ArcScript text into the Microsoft Visual Basic code window. Close the code window and return to ArcMap.



Customize window in ArcMap

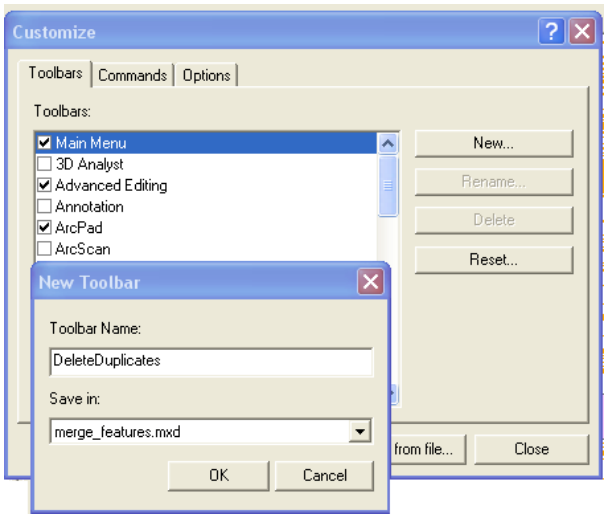
see **Dear GUS**, page 9

Dear GUS (from page 8)

Now, you are finally ready to use the button that you have created. Click on the layer name in the Table of Contents that you want to delete duplicate features from, and then click your newly created button. Wait patiently as the script runs through the features and tries to find duplicates. When it finishes, it will pop up a message box that details how many features were duplicates out of how many total features in the data layer.

I hope that this helps. Thanks for your great question!

GUS



Window to edit New toolbar in ArcMap

REGIONAL GIS NEWS

2007 NC GIS Conference:
"20 Years of Spatial Vision"
March 1—2, 2007 Winston-Salem, NC

Used with permission from Diana Hales, Center for Geographic Information & Analysis

The 2007 NC GIS Conference is less than 8 weeks away. The two-day program celebrates "20 Years of Spatial Vision" and promises a terrific group of presentations for our 10th Anniversary. The conference is **Thursday, March 1 and Friday, March 2, 2007** at the Benton Convention Center and Marriott Hotel (formerly Adam's Mark Hotel) in downtown Winston-Salem. The $85 registration fee includes the entire two-day program, 50 exhibits, two fabulous lunches, a poster session and Thursday evening social.

The preliminary programs have been mailed. If you did not receive one, go to the conference website to review the brochure. You can complete and print the registration form to mail in with your check only, no credit cards. Web address: http://www.cgia.state.nc.us/ncgis2007

Interested in the Carolina URISA Wednesday pre-conference workshops?
See the brochure for details,
1) Addresses and IS/GIS Implementation
2) GIS Enterprise Architecture & System Integration
3) GPS in North Carolina
4) Butting Heads or Building Community? How Surveying and GIS Professionals Can Work Together

Don't forget to apply for the prestigious 2007 G. Herbert Stout Award for exemplary use of GIS technology by a local government! Both a city and county will be selected to receive this award. See complete information on the web and consider entering on behalf of your agency. If you have used GIS to solve a problem, or used it to change a standard operating procedure in your agency and increased efficiency, consider it an "exemplary use" of this technology. Don't be shy. Submission deadline is January 31.

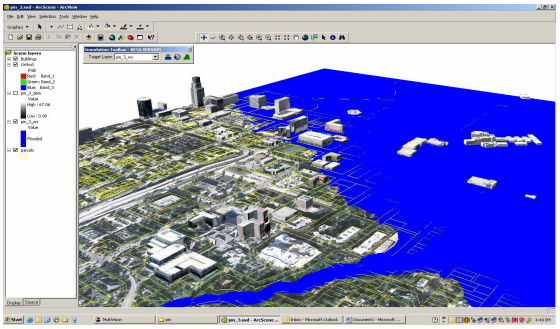
Think posters.
Governments and non-profits (and surprising entries from K-12 schools, too) are encouraged to submit a poster. Email Katie Brewer to reserve a space: kbrewer@hendersoncountync.org

ATTENTION GIS Professionals and candidates:
A poster earns "1" contribution point toward your GISP certification. Attending the conference earns credit, too.

Oblique Imagery Is What's New—But Whose Application is Best for YOU?

We have asked three companies leading the pack on oblique imagery, Multivision, Woolpert, and Pictometry, to tell us what makes their product special:

MultiVision and Public Safety: Perfect Partners



Example of Flood Zone Planning using MultiVision's 3D modeling tools imported into a GIS program

MultiVision's oblique aerial imaging technology is the tool that Public Safety uses to enhance its response and preparedness capabilities. All areas of Public Safety benefit when MultiVision is put to use by their agencies.

911 Call Taking: With the increased use of cellular phones in our everyday life, over half of all 911 calls received are from cell phones. These calls are coming from bike trails, hiking paths, interstate highways, busy metropolitan areas, boaters on waterways, campers, school children, and anywhere else a cellular phone could be used. A lot of these calls also come from tourists or people who are not familiar with the area. These facts make it imperative to be able to locate accurately the location of the 911 caller as quickly as possible. MultiVision's oblique aerial imaging makes this possible. Once the latitude and longitude are received from the 911 cellular call, the 911 call will be plotted on MultiVision showing the approximate location of the caller. The call taker will then have the option of seeing the actual pictures of the location and thereby ask the caller the pertinent questions to determine exactly where they are.

Dispatching: MultiVision allows dispatchers to see the exact layout and photographic images of the area they are sending responders to. This enables them to give better directions, better descriptions of the location being responded to, and better information of the surrounding area. MultiVision works with vehicle routing programs to make sure that road closures, one way streets, and other incidents are included with routing to determine the fastest response by the nearest unit. Also with the correct mobile data systems installed in the response vehicles, MultiVision's images can be sent directly to the responding units.

Law Enforcement: Using MultiVision's high resolution oblique aerial imaging, Law Enforcement Agencies have quick access to visual information that will help find the best route to the scene, make tactical placement decisions, and quickly locate the

See Oblique Imagery Options, Page 12

Kathryn Clifton

Kathryn is the GIS Coordinator for the City of Salisbury, NC in Rowan County. She is a 'one-woman show' and has done some impressive things there. Kathryn is also a prior officer of CURISA.

Did You Know....

Each installment of the Compass Quarterly features an interview with an active member of Carolina URISA. This quarter CURISA asks Kathryn Clifton of the City of Salisbury, NC a few questions. The interview can be found in the current Fall edition of the newsletter.

Mrs. Clifton, City of Salisbury GIS Coordinator, answers career questions such as What advice do you have for people who are interested in a career in GIS?, Do you know people who are not GIS professionals that have been affected by or have adopted GIS in their lives? How? When? Where?, and personal questions such as What would you like to be known for?, What is the best compliment you ever received?, and What is the most important thing that your mother/father ever taught you?

When asked what she enjoys most about her present job, her reply was:
I enjoy a number of things about my job – most of all, GIS training, GIS project visioning, and web development. I generally teach an introductory GIS class every other month, and I really enjoy the moment that I call the "light bulb moment" – when someone in a given field realizes the potential impact that GIS can have on their job, and things "click" for them. Also, I enjoy working with people throughout the City of Salisbury to define the scope of projects and how applications will work. One of my favorite things to do is web development – the value of GIS comes in the use of the information collected by a multitude of users.

To learn more about Mrs. Clifton and about what helps to keep the "one woman show" going, you can read a copy of this newsletter at www.carolinaurisa.org/Newsletter.PDF ◆

Meeting of the Geo-Spatial Minds

By *Benita Staples, City of Salisbury GIS Intern*

Carolina URISA & Carolina GITA—2006 Conference

On Wednesday, September 6 through Friday September 8, a group of who's who in GIS and spatial information in the Carolinas gathered for a conference in Charlotte, NC to discuss topics revolving around the GIS industry. The conference was hosted by Carolina Urban and Regional Informational Systems Association (CURISA) and Carolina Geospatial Information and Technology Association (CGITA) and sponsored by Central Piedmont Community College, Duncan Parnell, Chas H. Sells, North Carolina Railroad Company and Withers and Ravenel.

The conference covered a broad range of topics in order to appeal to the varied audience of professionals in attendance at the conference. Oblique imagery, implementing and funding GIS, professional certification, ArcGIS® Server and Data Clearinghouses were a few of the interesting topics discussed. Linda Wayne, FGDC/GeoMaxim and GISCI President, the keynote speaker, addressed the profession of GIS and went into detail to describe what it means to be a "profession", conquering questions on whether GIS is truly a profession or simply a tool used by other professionals. To close out the conference Janet Jackson and Randy Rambeau of McKim and Creed discussed similar topics in a presentation they call "Intersect Live". This presentation has gained popularity across the country debating GIS from a Surveyor and a GIS Professional point of view.

Overall, the conference had much to offer both entry level and seasoned professionals. As a first time attendee, I was able to network, learn various applications of GIS and to gain insight and advice on furthering my career in GIS and becoming a Certified GIS professional (GISP). As a seasoned professional, Kathryn Clifton was able to experience the conference in a completely different manner. She attended the conference and served on a panel as part of a session (see inset Article). ◆

NC Arc Users Group—2006 Conference

On Wednesday, October 18 through Friday, October 20, A small group of individuals gathered in Wrightsville Beach, NC to share GIS experiences, tricks of the trade and upcoming news and events at the North Carolina Arc Users Group (NCAUG) Conference. NCAUG is an organization that was created by and for users of ArcGIS® products to bring about a forum and environment where professionals could communicate and support one another. In attendance , were primarily brand new NCAUG members who held a meeting during the opening session. They were excited to talk about their expectations and needs from the organization and goals for the upcoming year. During the conference members gathered to talk about several topics such as GIS for emergency management and flood warning system, address management in ArcGis9.x , GIS case studies, Mobile GIS/GPS, GISP certification and 3D Analyst in conjunction with Google™ Sketch Up®.

The conference was not all work and no play. The conference located right in between the Atlantic Ocean and the NC intracoastal waterway harbor, made arrangements for attendees to explore the geography on a boat cruise , to partake in a luau feast and to have an opportunity to win many prizes including a free ArcView® license provided by the Charlotte ESRI office. As one of the brand new NCAUG member in attendance I would have to say that it is good to know that there are others out there going through similar tasks, procedures and problems as you, but more importantly it is good to know that those same people are out there and willing to provide support, and share knowledge. ◆

Carolina URISA Conference: A Panelist's Perspective

By Kathryn Clifton, City of Salisbury GIS Coordinator

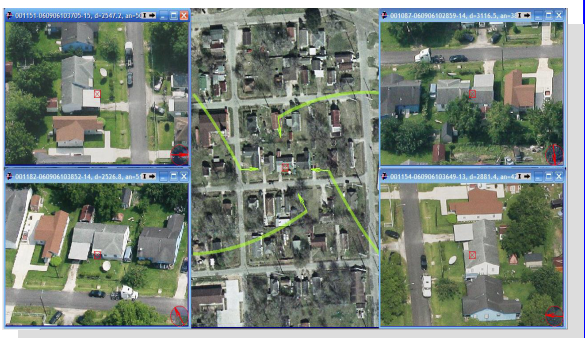
This year I had the unique opportunity to participate in the Carolina URISA conference as a panelist in the Taking GIS/GPS to the Field: Successful Configurations session. Several of the other panelists were vendors, and one other had supervised GPS data collection projects. I was very excited to share the experiences that I have had both with supervising and participating directly with GPS field projects.

Though a small municipality, Salisbury has taken on the task of collecting county-wide water and sewer infrastructure in-house using only a three-person GIS staff in Salisbury-Rowan Utilities. Likewise, several GIS interns in Land Management and Development have begun the task of collecting NPDES outfall points along the three main streams that run through Salisbury. While the data collection is being done in-house, the data schema design and mobile application design has been done with the assistance of OneGIS and Bradshaw Consulting Services.

We are hopeful that our field experiences may be of use to others who anticipate similar data collection efforts. ◆

Oblique Imagery Options (from page 10)

location being responded to. The images will allow responding units to not only see what the location looks like from all sides, but also the surrounding area to make sure escape routes are covered as well as best positions for officer safety. MultiVision can also be used for preplanning events, such as search warrants, drug raids, and surveillance.



Click anywhere on the ortho and up pops the four views of that structure or location with x, y, and z coordinate values.

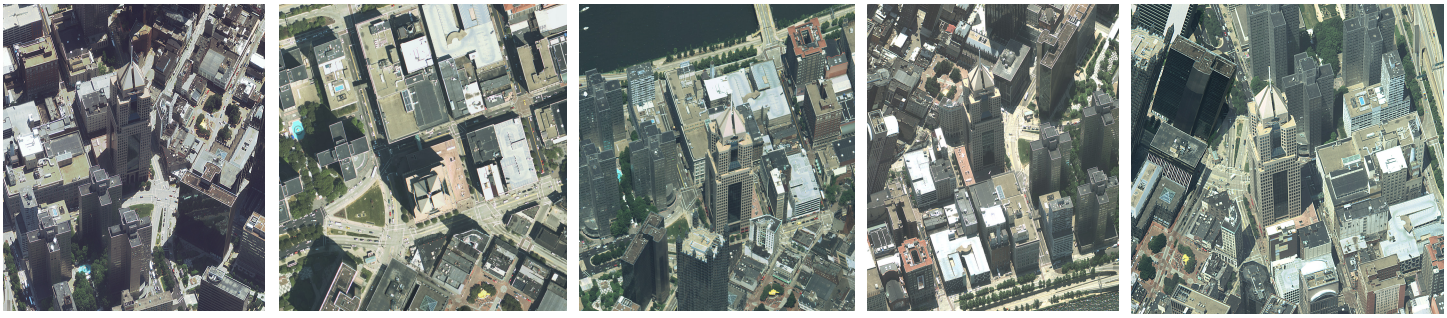
Fire Rescue: Fire Rescue Agencies also benefit from the increased response information they receive from MultiVision's images. MultiVision also offers the capability to measure the size of the building, height, width, depth, as well as distance from fire hydrants and vehicle access points. This is especially important when responding to a location during the night or when visibility is limited due to smoke or adverse weather conditions. MultiVision is also an excellent source for preplanning. Fire fighting plans can be made for existing structures or combination of structures by utilizing information from MultiVision's images along with the special tools provided which includes 3D imaging, measurement tools, topography information as well as other GIS information received from your GIS department. This could include utility information, building data, etc.

Emergency Management: MultiVision's images and the tools that are offered with it make this almost a necessity for Emergency Management Agencies. By utilizing the MultiVision images and tools, information can be retrieved as to incident location, size of the incident, size and direction of spread whether it is a cloud or a spill, values at risk, what hospitals and medical services are in the area, fire stations, law enforcement locations, transportation networks, utility assets, housing and building data. MultiVision also has the ability to re-fly an area after a severe incident such as a hurricane or tornado helping to assess total damage and show side by side comparison imagery.

Advantages: MultiVision is user friendly, easy to train call takers, dispatchers, first responders, and command staff to use. You get high resolution and multiple views of the same location. GIS information can be imported effortlessly and MultiVision imagery can be exported to any GIS run program. The images are 3-D capable and vertical and horizontal measurements can be done quickly and easily helping the user to make informed decisions during critical moments.

MultiVision USA is headquartered in Orlando, Florida with offices throughout the US. With over 24 aircraft located throughout the US they are ready to meet the needs of federal, state, county and local agencies. For more information please visit website @ www.mv-usa.com. ◆

Woolpert's SmartView™ Takes a Different Spin on Oblique Imagery



East View | Nadir View | North View | South View | West View

Oblique aerial view (OAV) imagery has existed since the first aerial photographs were taken from an aerial balloon in 1858. OAV imagery was the most commonly used type of aerial photography until World War II, when aerial reconnaissance began using vertical views as the standard.

Since World War II, vertical view ortho imagery has been most commonly used, especially when accuracy has been essential. Approximately five years ago, digital frame *oblique photos* with geo-coordinates made their way into the aerial photography industry. Geo-referencing brought some accuracy to oblique imagery and expanded its usability. Today, many federal, state and local agencies are realizing the benefits of OAV imagery.

OAV imagery supplements traditional overhead ortho imagery by providing multiple, angled views of ground features, allowing decision makers to see these features in context with other surrounding features, regardless of which angle is being viewed. However, current OAV collection approaches rely on frame-by-frame image gathering, which results in an

See Oblique Imagery Options, Page 13

Oblique Imagery Options (from page 12)

abundance of single-frame images requiring storage and management by third-party, proprietary software. These approaches can fall short on accuracy, and they provide limited viewing and roaming capabilities.

Woolpert's OAV solution is SmartView™—state-of-the-art camera technology linked with an image-processing workflow that uses three-line scanning principals to produce four cardinal views at 45-degree angles in addition to the traditional overhead ortho image. The result is a continuous oblique and overhead view imagery dataset compatible with existing GIS, CADD and map-server systems. Woolpert's SmartView imagery gives users accuracy, usability and flexibility unavailable with current OAV approaches.

The only product of its type, SmartView imagery is collected with Woolpert's proprietary photogrammetric-grade, large-format digital-scanning cameras. Combined with GPS and inertial measurement technologies, SmartView data produces exceptional positional ground accuracies which can be critically important to first responders. Additionally, OAV imagery produced by SmartView can be overlaid on existing data layers of the highest accuracy.

Current technologies require access to an image database containing hundreds of individual image frames, viewable one at a time. Since SmartView imagery is delivered as continuous image layers, thousands of postage stamp photos are replaced with only a few continuous OAV images. Multiple oblique views as well as the overhead view can be collected in a single mission, allowing zoom in and zoom out capabilities on any given cardinal view. And because SmartView products are delivered in industry-standard compression formats such as MrSid®, ERMapper's ECW, or GeoJPG2000, display and roaming times are exceptional.

Products are compatible with GIS, CADD or georeferenced image viewing platforms. This means no third-party software is required. Our continuous, oblique image-base concept is ideal for storage in ESRI's ArcSDE® and Image Server products and is optimized for web and desktop navigation. Additionally, custom extensions are available through tools such as ArcGIS® Desktop and ArcGIS Server to allow for functionalities including intelligent rotation, height and area measurements. And since SmartView is not a licensed product, the data we deliver belongs to the client.

Woolpert's approach to providing SmartView services is based on over 30 years of aerial mapping experience developing technology-based photogrammetric and GIS solutions. For more information please visit website @ www.woolpert.com. Or, please call 800.414.1045 or email them at smartview@woolpert.com. ◆

Pictometry - Providing Customer Success through Continuous Innovation

Pictometry, the company, is the inventor of and world leader in digital, oblique georeferenced aerial imaging systems with the vast majority of installations in the market. The rapidly growing innovative company is the sole developer and marketer of a patented oblique aerial imaging software system that is used by over 250 counties, three states, and a variety of federal agencies, private businesses, and a growing international presence. The company has aerial photographed approximately 50% of where the U.S. population resides and anticipates having 80% of the developed U.S. covered in 2007. Major metropolitan areas using Pictometry® technology include Atlanta, Baltimore, Boston, Indianapolis, Los Angeles, Minneapolis, New York City, Philadelphia, San Francisco, and Washington, DC.

The company's management team includes subject matter experts in geospatial sciences, government imaging, land use and environmental planning, law enforcement, and business expertise. The company recently announced it was doubling the size of its corporate offices in the Rochester area, investing 10 million dollars in operations infrastructure, and was ranked 3rd on the Rochester Top 100 list of fastest growing privately held corporations in the area.

Core Technical Competencies and Capabilities:

- Deep technical expertise - one in four employees of the company works in engineering.
- Continual innovation, with 17 patents in process.
- The company's camera calibration system was selected and licensed by the United States Geological Survey to calibrate digital aerial cameras at their EROS data center.
- The company recently delivered over 8,000,000 unique, georeferenced digital aerial oblique images in just six months.
- 50 domestic imaging capture systems in place.
- Pictometry can process over 500,000 high-resolution oblique images on a daily basis.

See Oblique Imagery Options, Page 14

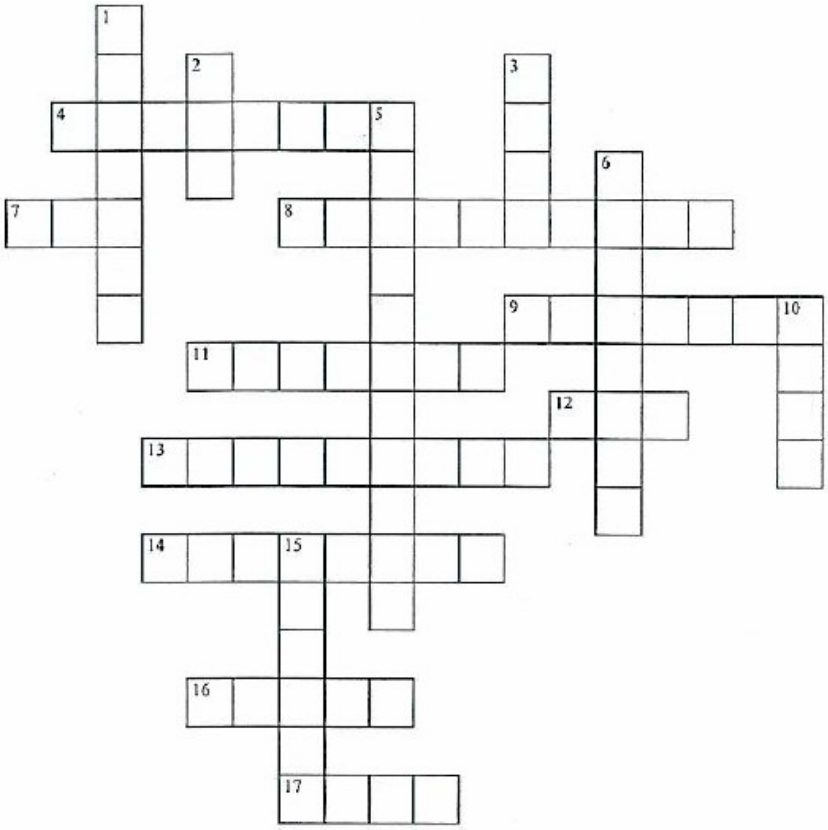
GIS Crossword Puzzle

ACROSS

4 Moving a feature, or portion of it to coincide with the coordinates of another feature
7 A Planimetric map is ___ dimensional
8 Thematic map in which the areas are colored or shaded to reflect density or to symbolize classes
9 Point, line or Polygon
11 Last name of Salisbury GIS Coordinator
12 Symbol used to represent this action on GIS Toolbar is a white hand
13 Information about a feature generally stored in a table linked to the feature by a unique identifier
14 The A in CGIA
16 Column or vertical dimension of a table
17 Database Management System

DOWN

1 Topography is represented on a map by ____ lines
2 Global Positioning System
3 Certified Geographic Information Systems Professional who has met the minimum standards for ethical conduct and professional practice as established by the GIS Certification Institute
5 Represents attributes as objects and is hosted inside a relational database
6 Information about a data set
10 World leader in GIS modeling and mapping software and technology
15 The reference on a map that explains colors, symbols and annotation



Answers to the crossword puzzle will be printed in the next newsletter edition

Need GIS Training?

See page 18 for details...

Oblique Imagery Options (from page 13)

Pictometry Product Overview:

- Patented direct-georeferencing technology. Pictometry can capture both oblique and ortho imagery at the same time and deliver them quickly and at a very attractive price.
- LiDAR is not required to produce measuring capabilities. LiDAR can be used to increase accuracy.
- Innovative solutions created with and for the customer, such as a touch screen software interface for oblique aerial imaging deployment on mobile systems for law enforcement, fire departments, and other applications.
- Pictometry Change Analysis™ allows users to compare and analyze imagery from different data collections providing important input for tax appraisal or assessment of natural or other type of disaster.
- Pictometry's Rapid Response Program has the fastest delivery of post disaster oblique, georeferenced digital aerial images in the world with delivery of georeferenced oblique images in days.
- Easy to use software features a wide range of standard measuring tools and related options that include distance, height, facade, location, area, elevation, bearing, query, navigate, linking capabilities, and annotations.
- The Pictometry Real3D™ Suite of products provides Pictometry customers with the option to create 3D models semi automatically using Pictometry images themselves or have it professionally created by Pictometry and its partners. Each Pictometry Real3D product option utilizes data from Pictometry's all digital oblique imagery to create a rich, 3D experience.

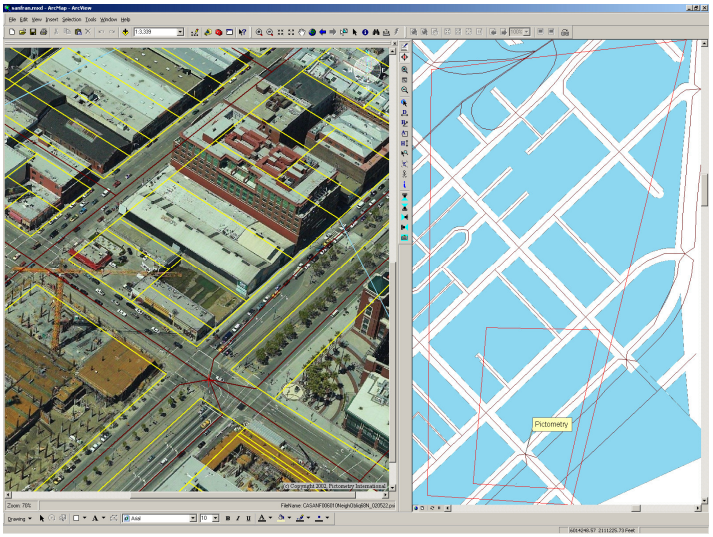
See Oblique Imagery Options, Page 15

Oblique Imagery Options (from page 14)

Business Partnerships

- Pictometry has over 20 contractual business partnerships and marketing alliances with 9-1-1 mapping systems.
- Pictometry is an ESRI Developer Partner.
- Pictometry has a Master Distributorship agreement with Hitachi Software for its HouseDiff service that automatically detects changes using existing ortho imagery and new imagery.
- Appraisal partnerships with CLT, Facet Technology, Manatron, Mobile Video Services, and Smart Data Strategies.

Company's expertise enables it to develop technical advancements with a growing list of leading companies such as Harris, Sanborn, and others.



Screen Capture of ArcMap software embedded with Pictometry software and oblique image with GIS Layers

Pictometry Extension for ESRI ArcGIS

Geographic Information System (GIS) departments can now utilize a number of new enhancements with Pictometry's Extension for ArcGIS. Pictometry's Extension for ArcGIS allows digital oblique imagery to be viewed and used inside a variety of ESRI products. The power of oblique imagery combined with the power of GIS all within the ESRI operating environment opens many doors for GIS professionals. The Pictometry Extension is available for ArcGIS/ArcMap 9.X and ArcIMS.

Pictometry EFS version 2.7

Scheduled to be released in 2007 and currently in beta at a number of customer sites, a few of the many features of EFS 2.7 that Pictometry customers will receive free of charge will include:

- Over 100 new Component Object Module interfaces.
- The ability to easily add custom tools.
- Improved data exporting capabilities with the ability to enter data directly into database forms.
- Automated feature labeling on both maps and images such as house numbers, street addressing, and other GIS data.
- Geographic grid creation, either rectangular or radial, ideal for search and rescue and recovery, with the ability to easily record findings into each grid cell and store it in a GIS database.
- Adjustable Penta Viewer – the ability to configure, adjust, and navigate in multiple, coordinated viewing windows of oblique and orthorectified images in an intuitive manner. You select which view, ortho centric or oblique centric, meets your needs.

For those government agencies looking to obtain metric oblique, digital aerial imagery and software, Pictometry welcomes the opportunity to have these agencies visit its world headquarters and can arrange site visits with many of its satisfied customers. For more information please visit website @ www.pictometry.com. Or, please call Erin Ford at 704.341.9126 or email him at erin.ford@pictometry.com. ◆

GIS Strategic Plan (from page 1)

Next, Dr. Cooper encouraged the group to review and celebrate the accomplishments that have taken place in the past two years. There's still a long way to go toward the integration of GIS throughout the City. However, there have been great strides in recent years.

How has GIS helped the City? Here's just a short list….

- Aided Management Services in the cost/benefit analysis of potential areas for annexation;
- Identified potential economic development areas—vacant property within the City limits ripe for development;
- Maintained the State Development Zone, and responded to inquiries from developers regarding incentives for developing within the zone;
- Moved GIS data to a centralized ArcSDE data server;
- And acquired software to aid in the development of online applications.

Dr. Garry Cooper will present additional findings regarding the update of the GIS Strategic Plan at the February 6, 2007 City Council Meeting. Upon their adoption of the plan, it will be made available online @ gis.salisburync.gov. ◆

New Program offers GIS Education Opportunities

Central Piedmont Community College located in Charlotte, NC has a new academic program in Geographic Information Systems (GIS) Technology. The Geospatial Technology Training Center (GTTC) at the college offers many options for those individuals just interested in learning more or starting an academic career in GIS, as well as, those individuals interested in corporate and continuing education.

The Geospatial Technology curriculum provides a broad background in GIS and Global Positioning System (GPS) technologies with practical applications in municipal, industrial, natural resources management, and other fields. Course work consists of class and hands-on experience with GIS/GPS technologies, including running and modifying current GIS software, creating and manipulating GIS databases, and operating GPS technology.

Upon completion of this program the Associate in Applied Science Degree –GIS/ GPS Technology will be awarded by the College . The GTTC has also created nine (9) curriculum-based certificates to focus on general skills or specific applications. Their purpose is to satisfy the basic requirement of receiving GIS training that included theory as well as hands-on experience with software and hardware technology without completing the entire degree program. As an example, these certificates may be useful for an individual who has a degree in one discipline and is interested in complementing that degree with general or specific GIS skills. Scholarships are available for students in the degree or curriculum-based certificate programs. These scholarships are currently funded by the Institute for GIS Studies (IGISS) and will be offered through May of 2007.

For more information, details about the programs can be accessed via the internet at http://www.cpcc.edu or you can contact the program director, Chris Paynter, via email at chris.paynter@cpcc.edu or phone 704-330-6531 ◆

Salisbury Receives New Color Orthophotos from Rowan County

Recently, the City of Salisbury received updated color aerial photography from Rowan County. The aerial photography was flown by Spatial Data Consultants, Inc. in March 2006. The entire county was flown at 200 scale, in color.

The City of Salisbury also obtained building footprints during the course of the project for the Salisbury 2020 study area boundary.

The difference between the older black and white and the new color aerial photography is striking. GIS users throughout the city have been using a 2 foot mosaic MrSID image and soon will be able to use the imagery directly from ArcSDE.

Aerial photography has proven to be an essential basemap data layer for the City. It provides a very quick method for discerning the placement of streets, homes, creeks, trees, etc. A picture is truly worth a thousand words!

As Salisbury continues to develop, it will be important to maintain up-to-date photography and building footprints for the City. ◆

2002 black & white aerial photography (W Jake Alexander Boulevard)

2006 color aerial photography (W Jake Alexander Boulevard)

JANUARY 2007

ESRI Federal User Conference
January 9–11, 2007
Washington, DC

ArcGIS I Training
January 29-30, 2007
Salisbury, NC

ArcGIS II Training
January 31-February 2, 2007
Salisbury, NC

MARCH 2007

NC GIS Conference
March 1-2, 2007
Benton Convention Center
Winston Salem, NC

11th Annual Integrating GIS & CAMA Conference
Co-sponsored by URISA and IAAO
March 4-7, 2007
Flamingo Hotel, Las Vegas, NV

GITA's Annual Conference 30
Date: March 4-7, 2007
Place: Henry B. Gonzalez Convention Center
San Antonio, TX

ACSM Annual Conference
March 7-14, 2007
St Louis, MO

ESRI Worldwide Business Partner Conference
March 17–19, 2007
Palm Springs, CA

20th Annual Towson University Geographic Information Sciences Conference (TUgis 2007)
March 19-20, 2007
Baltimore, MD

ESRI Developer Summit
March 19–22, 2007
Palm Springs, CA

ArcGIS I Training
March 20-21, 2007
Salisbury, NC

9th Crime Mapping Research Conference
March 28—31, 2007
Pittsburgh, PA

APRIL 2007

2007 Nebraska Biennial GIS Symposium
April 3-5, 2007
Omaha, NE

2nd Annual Geospatial Integration for Public Safety Conference
April 15-18, 2006
New Orleans Marriott, New Orleans, LA

Location Intelligence Conference 2007
April 16 - 18, 2007
San Francisco, CA

AAG Annual Conference
April 17-21, 2007
San Francisco, CA

ESRI Business GeoInfo Summit
April 23–25, 2007
Dallas, TX

MAY 2007

ESRI South Eastern Regional User Group
May 2 - 4, 2007
Jacksonville, FL

JUNE 2007

NENA Conference and Trade Show
June 9-14, 2007
Charlotte, NC

GPS World Conference & Expo
June 11 - 13, 2007
Convention Center
Rosemont, IL

ESRI Survey & Engineering GIS Summit
June 16–19, 2007
San Diego, CA

The 27th Annual ESRI International User Conference
June 18 - 22, 2007
San Diego Convention Center
San Diego, CA

AUGUST 2007

URISA's 45th Annual Conference
August 20-23, 2007
Washington Hilton
Washington, DC

TRAINING OPPORTUNITIES

ArcGIS 9.x
Training is available for the desktop application ArcView/ArcEditor/ArcInfo 9.x at the City of Salisbury Authorized Partner Education Center **or on-site at your location.**

Introduction to ArcGIS I is a two-day class intended to introduce individuals to ArcGIS and provide the foundation for using ArcGIS. Individuals learn how to use ArcMap, ArcCatalog, and ArcToolbox. The class covers basic GIS concepts, as well as how to create, edit, and maintain spatial data. This course is intended for those who are new to ArcGIS or to GIS in general. Cost: $600 per person

Class dates for Intro to ArcGIS I: January 29-30, 2007 8:45am—5pm **(full)** March 20-21, 2007 8:45am—5pm
Additional dates available upon request.

Introduction to ArcGIS II is a three-day class that focuses on spatial analysis, automation of spatial and attribute data, editing, and advanced options for cartographic display. A portion of the class is reserved for carrying out an analysis project and applying many of the new skills and techniques learned in this course. Cost: $900 per person

Class dates for Intro to ArcGIS II: January 31-February 2, 2007 8:45am—5pm **(full)**
Additional dates available upon request.

Classes Available Upon Request
Other ESRI ATP ArcGIS classes may be scheduled upon request. These classes include:

* Introduction to ArcIMS
* Introduction to Programming ArcObjects with VBA
* Working with ArcGIS Spatial Analyst
* Introduction to Geoprocessing Scripts using Python

Class size is limited to twelve students. The instructor must have at least two weeks' notice prior to the date you would like to receive training so that adequate manuals, etc. can be ordered.◆

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